FACTORS AFFECTING THE EFFECTIVENESS OF THE KNOWLEDGE TRANSFER PROCESS AT INSTITUTIONS

ABSTRACT The effectiveness of knowledge transfer activities in a large organization, such as a university or research institute, can be significantly improved by paying attention to a few key factors. One such factor could be the so-called scouting activity. The knowledge transfer process does not necessarily start with the submission of the invention disclosure. Scouting is the activity of identifying those elements of knowledge within the institution that can be used to start a new knowledge transfer process. Another factor could be to broaden the scope of knowledge elements, i.e. to focus not only on technologies but also on non-technological innovations or know-how-type intellectual properties. All this can significantly broaden the range of knowledge that can be transferred, generating more and better potential outcomes for the institution. In this article, we explore the possible applications of these types of factors and activities.

INTRODUCTION

Nowadays, as part of their third mission, universities are increasingly becoming knowledge centers, no longer focusing exclusively on education and research, but also on the dissemination of the knowledge they generate and the transfer of the technologies they develop to the economic sphere.

However, it is important to be aware of the fact that the technology transfer offices (TTOs) of universities work with inputs generated by other parts of the university, i.e. they are not primarily responsible for the size of the base with which they can then launch technology transfer processes. Transferable knowledge is not created in TTOs but in university research groups, institutes and faculties. Thus, while TTOs have no direct influence on the creation of intellectual property (IP), they can have some influence on the quantity and quality of the IP portfolio. What can the TTO do if it wants to increase the number of technology transfer (TT) cases?

In this article, three main options are discussed. Firstly, we mention those options that indirectly seek to support the objective by creating a supportive environment. Second, we focus on the so-called „scouting“ process, i.e. the search for potentially exploitable intellectual creations. In the final part of the article, we look at the potential broadening of the focus, i.e. that it may be worthwhile to look at the exploitation and transfer of non-technological solutions in addition to technologies.

INTEGRATING AN INNOVATION APPROACH INTO UNIVERSITY OPERATIONS

Indeed, creating an environment, with the support of the university‘s senior management, at both strategic and operational levels, that

motivates researchers to create new intellectual creations and, when created, to disclose them, can significantly positively impact the institution's technology transfer performance. Some examples of the measures proposed to achieve this objective are given below:

TTOs play an essential role in the exploitation of university research results. These offices act as intermediaries between universities and industry, facilitating collaboration between researchers and companies. Resources are important, not only to finance intellectual property rights (IPR) costs, but also to have competent staff.

In addition, universities should actively seek opportunities for **cooperation with companies.** This includes launching joint research projects, involving company experts in university teaching and developing training programs tailored to industry needs. A good example of this in Hungary is the Cooperative Doctoral Program, under which doctoral students carry out part of their research as employees on an industrial site.

USE OF INTERNAL, INSTITUTIONAL INCENTIVES

Finally, there is also an option to **motivate researchers.** The TTO could, for example, propose to doctoral schools that not only publications but also, for example, patents should be accepted as achievements and counted towards the degree. The process is also supported if innovation aspects and factors are included in the evaluation of researcher performance. These can be proposed by the TTOs to the strategic management of the university. At the same time, there are also tools that the TTO can create and operate in the institution. For example, the creation of an award. The award of an „Innovative Researcher of the Year" prize could motivate researchers to improve their innovation performance if they are awarded this prize. Overall, it is therefore important to create an environment in which the creation of intellectual creations and participation in technology transfer processes is clearly encouraged by the university. This can be operationalized at the level of doctoral students and researchers and research groups by building in

Ceremonial signing of a technology transfer agreement with a large Japanese company. Source: Archive MD.

university measurement and evaluation systems. At Eötvös Loránd University (ELTE), for example, the Rector presents the Innovative Researcher Award every year in the plenary part of a major Innovation Day, which, in addition to its prestige value, also includes a financial reward.

IDENTIFYING THE LARGEST POSSIBLE NUMBER OF EXPLOITABLE IP WITHIN THE INSTITUTION

Scouting in universities is a strategic process aimed at discovering, identifying and exploiting research results and IP. This activity is key for technology transfer and the development of the innovation ecosystem, as it enables universities to turn their research results into market value.

Main steps of the scouting activity:

1. Scouting and identification: The first step of the scouting activity is the identification of research projects and intellectual creations. This involves identifying innovations, inventions and results with patent potential created by researchers and students. For example, it is recommended that all relevant contract research and development projects are examined and screened for exploitation.
2. Preliminary assessment: the identified IP are assessed and analyzed to determine their market potential, patentability and exploitability.
3. IP management: following the assessment, a patent and exploitation strategy can be developed.

The scouting activity poses a number of challenges that can make it difficult to effectively identify and exploit research results and IP. The most common challenges are described below:

1. Identifying potential innovations: there are many research projects in universities and it is not always easy to identify those with real market potential. Researchers often do not recognize the patentability or market value of their own work, which makes scouting difficult.
2. Identifying market needs: identifying and assessing the market needs for research results can also be a challenge. In scouting activities, it is important that the innovations identified genuinely meet market needs and are competitive. However, in the case of university research, this is rarely the case. They are usually early-stage innovations whose specific market viability direction may not yet be concretized at that stage.
3. Cooperation with researchers: Cooperation between researchers and TTOs is not always smooth. Researchers are often more focused on scientific publications and research projects and less interested in patenting and technology transfer.
4. Funding constraints: Funding scouting activities can also be a challenge. Universities often have limited resources to run TTOs and to fund patent applications. Scouting activity in itself requires significant human resources.

EXTENDING THE FOCUS

For the success of the third mission of universities, I am convinced that it is essential to broaden the focus from the traditional technological innovation paradigm to broader areas of innovation (methodological innovation, social innovation, etc.). When universities consult with their external, large corporate partners, they often come up with problems related to the labour market, consumer behaviour, regulation, which cannot be solved with a traditional technological focus.

I therefore propose to replace the term technology transfer activity with the broader term knowledge transfer activity and to use the term knowledge transfer office instead of technology transfer offices. The rationale for this is that complex problems require a complex response, which can often only be developed through interdisciplinary cooperation between disciplines. ELTE, as a classical science university, is increasingly setting up inter-faculty research-innovation collaborations to achieve a specific goal.

Presentation of the Innovative Researcher Prize at our university. Source: Archive MD.

The British Academy, for example, uses the acronym SHAPE (Social Sciences, Humanities and the Arts for People and the Economy) to collectively refer to non-technological innovation areas . The University of Cambridge established the Centre for Research in the Arts, Social Sciences and Humanities (CRASSH) in 2001 as a research and innovation center to support non-technological innovation.

It is also important to note that the three disciplines taken as examples have specificities in terms of knowledge transfer, not only in that the results of innovation are used in a somewhat less direct way in the economic sphere. Here are some of these specificities to be aware of when targeting innovation areas beyond technology in our knowledge transfer activities.

Social Sciences

1. Interdisciplinarity: social sciences often overlap with other disciplines such as economics, psychology, law or political science.

2. Practical applicability: research findings are often directly applicable to public policy, education and other social systems. Thus the direction of exploitation is often B2G (business to government), which requires a specific knowledge transfer methodology.

3. Data protection and ethics: social science research often involves the collection of personal data, so data protection and ethical issues require special attention, more so than in the case of technical development.

Humanities

1. Preservation of cultural heritage: The humanities aim to preserve and transmit cultural heritage. It is important to preserve the historical and cultural context in the transfer of knowledge in universities.

2. Language and communication challenges: language and communication are central to the humanities. Linguistic and cultural differences must be taken into account in the transfer of knowledge.

3. Digital transition: the integration of digital technologies in the humanities creates new opportunities for storing, analyzing and sharing data. See for example the digital humanities discipline.

Arts

1. Supporting creative processes: knowledge transfer in the arts aims to support creative processes and innovation. Universities often collaborate with artists and creative industries.

2. Interactive and experiential learning: interactive and experiential approaches to arts education are at the forefront, which facilitate the acquisition of practical skills.

3. Community engagement: arts projects are often community-engaged, so it is important to build community relationships and collaborations in the transfer of knowledge.

To conclude, here is an example of how often at the intersection of a technological and non-technological field, results are produced that can be used in a knowledge transfer process. In our case, the two fields are the arts and information technology. The digital transformation of the arts is an exciting and multifaceted process that brings with it many new opportunities and challenges.

New forms of expression: digital technologies allow artists to use new media and tools for their work. Digital painting, 3D modelling, virtual reality and augmented reality all offer new forms of expression for artists to experiment with.

Wider reach: Online galleries, social media and streaming services allow artists to reach a global audience and connect directly with viewers.

Interactivity and community participation: This creates new experiences and community engagement that enrich the artistic experience.

Archiving and preservation: Digital technologies help to archive and preserve works of art. Digital copies and databases allow works of art to be preserved for the long term and easily accessible for future generations.

Ethical issues: Digital transformation also brings with it a number of challenges, such as copyright protection and data protection.

SUMMARY

A well-prepared university knowledge transfer organization must also be able to confidently manage the transfer of IP created at the intersection of disciplines. In summary, I would therefore once again recommend, on the one hand, the creation of a supportive and open innovation environment and, on the other, the strengthening of scouting, i.e. the mapping of potentially exploitable university IP. My third suggestion is to broaden the focus of the technology transfer competences, complementing them with increasing attention to the exploitation of intellectual creations arising from meeting technological and non-technological fields, thus helping universities fulfil their third mission.

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